XIV. *Obſervations on the Hinges of Britiſh Bivalve Shells.*

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AMONG the many authors who have either noticed ſhells in their works on Natural Hiſtory, or have written profeſſedly on the ſubject, it is rather extraordinary that no particular attention ſhould have been hitherto paid to their hinges; more eſpecially as they afford the leading characters by which ſhells are arranged.

Da Coſta, indeed, in his *Elements of Conchology*, has figured the hinges of the ſeveral genera of bivalves; but many of them are not calculated to give a clear idea of the parts which they are intended to repreſent: beſides, he has confined himſelf to one ſpecies in a genus, which is by no means ſufficient, inaſmuch as many of the hinges of the ſame genus of ſhells differ materially from one another in their ſpecific characters.

Figures on this ſubject have been given alſo in the laſt volume of the *Amœnitates Academicæ*; but theſe are more calculated to miſlead than to inſtruct. The conſideration that ſomething of this kind, executed in a more accurate and comprehenſive manner than has hitherto been done, is ſtill a deſideratum among conchologiſts, has induced me to attempt the following obſervations, which I lay before the Society with all diffidence, conſcious that they are far from being faultleſs, and that ſome ſhells are omitted which may,

for any thing I know to the contrary, exhibit peculiarities in the formation of their hinges, not to be found in this paper. Perhaps what is already finiſhed may excite ſome more able member of this Society, whoſe cabinet is more extenſive, to complete the ſubject.

I am indebted to the accurate pencil of my friend Mr. Henry Boys for the *Solen pellucidus*, *Tellina bimaculata*, *Venus Chione*, and *Venus undata*. My acknowledgments muſt likewiſe be made to his moſt reſpectable father, William Boys, Eſq. for the ready acceſs which I have at all times had to his collection.

In the courſe of the following remarks, it will be noticed, that ſeveral ſhells are totally neglected, which are too common to be wanting even in a very confined collection. To account for this, it will be neceſſary to mention all the ſhells belonging to the Britiſh ſeries of bivalves which have not been inſerted, and to give a ſufficient reaſon for their omiſſion.

Of the genus *Mya*, all have been figured, except the *M. dubia* of Mr. Pennant, which at preſent I have not in my collection.

Of the *Solenes*, I have neither the *Legumen* nor *Cultellus*. But their loſs is of little conſequence, as the teeth of the former (according to Mr. Pennant) exactly reſemble thoſe of the *S. pellucidus*; whilſt the latter, having a ſingle tooth on both ſides of the hinge, will probably not differ materially from the *Vagina*. The hinge of the *S. Enſis* agrees exactly with that of the *Siliqua*.

Among the *Tellinæ*, the *T. fragilis* is unknown to me. The *T. trifaſciata*, *cornubienſis*, and *donacina*, are wanting, and the hinge of the *Fabula* is like the *planata*.

There is too great a ſimilarity in the hinges of the ſpecies belonging to the genus *Cardium*, to make more than one figure neceſſary.

Excepting the two lateral teeth of the *Mactra ſolida*, no eſſential

difference is to be perceived between the hinge of that ſhell and of the *M. lutraria*. I have therefore omitted it, in order that the number of figures might not be unneceſſarily increaſed.

Of the two ſpecies of *Donax*, deſcribed by Britiſh conchologiſts, the *Trunculus* only is in my poſſeſſion; but it is more than probable, from the reſemblance theſe two ſhells bear to each other, that their hinges are not very diſſimilar.

I have never ſeen the *Venus deflorata*, deſcribed and figured by Mr. Pennant in the *Britiſh Zoology*. The *V. ſinuoſa* and *ovata* are not among my ſhells; and the hinge of the *V. rotundata* is too like the *decuſſata* to need a deſcription. The hinge of the *V. borealis* will be found, upon compariſon, to reſemble exactly that of the *Mactra alba*; therefore it would be placed with more propriety in that genus. The *Donax Irus* ought at the ſame time to be removed into the third diviſion of the genus *Venus*, where the contour of the ſhell, as well as the formation of the hinge, will point out its proper ſituation.

In the genus *Arca*, it was thought unneceſſary to give a figure of the *lactea*, after exhibiting the ſtriking difference between the hinge of the *A. Nucleus* and *Glycymeris*.

Of the genus *Pecten*, *Oſtrea*, *Anomia*, and *Mytilus*, it is ſufficient to ſay, that a ſpecimen has been given from each, as the ſpecies are, for the moſt part, deſtitute of teeth, and the ſhells merely united by cartilage.

MYA.

truncata. *Linn. Syſt. Nat. ed. Gmel.* 1. *p.* 3217. *Penn. Br. Zool. No.* 14. *t.* 41. *f.* 14. *Da Coſt. Br. Conch. p.* 233 *t.* 16. *f.* 1. 1.—*Elem. Conch. t.* 7. *f.* 16. *Liſt. Conch. t.* 428. *f.* 269.—*Hiſt. An. Ang. t.* 5. *f.* 36. *Gault. Teſt. t.* 91. *f. D. Chemn. Conch.* 6. *t.* 1. *f.* 1, 2.

TAB.

TAB. XIV. Fig. 1, 2.

A thick, broad, upright, ſtriated tooth in the upper valve*; in the lower valve, a deep, ſpoon-ſhaped hollow, with a ſmall tooth on one ſide, and a ſharp ridge on the other, running from the beak towards the truncated end.

Liſter, in his *Hiſtoria Animalium Angliæ*, has figured the lower valve of this ſhell; but has totally miſtaken the form of the tooth.

Da Coſta, in his *Britiſh Conchology*, and likewiſe in his *Elements*, has ſucceeded better, although his figures are by no means perfect.

arenaria. *Linn. Syſt. Nat. ed. Gmel.* 1. *p.* 3218. *Penn. Br. Zool. No.* 16. *t.* 42. *f.* 16. *Liſt. Conch. t.* 418. *f.* 262.—*Baſt. Opuſc. ſubſ.* 2. *p.* 69. *t.* 7. *f.* 2, 3. *Argenv. Zoom. t.* 5. *f.* 10.

TAB. XIV. Fig. 3, 4.

Hinge with an upright, fanſhaped tooth; on the ſide, a ridge deeply ſulcated; lower valve like the preceding, except the ſide tooth, which is ſcarcely to be diſtinguiſhed.

Mr. Pennant has given a very good figure of the tooth in the upper valve of this ſhell, and of the *M. truncata.*

* For the ſake of perſpicuity, in the deſcription of the Hinge, I have called that the upper valve which contains the great tooth.

margaritifera.

margaritifera. *Linn. Syſt. Nat. ed. Gmel.* 1. *p.* 3219. *Penn. Br. Zool. No.* 18. *t.* 43. *f.* 18. *Da Coſt. Conch. t.* 15. *f.* 15. *Liſt. Conch. t.* 149. *f.* 4.—*An. Ang. App.* 15. *t.* 1. *f.* 1. *Chemn. Conch.* 6. *t.* 1. *f.* 5. *Gault. Teſt. t.* 102. *f. C. Klein. Oſtr. t.* 10. *f.* 47. *Knorr. Vergn.* 4. *t.* 25. *f.* 2.

TAB. XIV. Fig. 5, 6.

The hinge of this ſhell is very thick and rugged; the tooth in the upper valve blunt, and uneven at the top. On one ſide there is a ſulcus, which receives a ſmall tooth from the oppoſite valve, at the ſame time that the large one fits into a correſponding depreſſion.

This, with the following ſhell, completes Da Coſta's genus of *Mya*. The two former he has placed among the *Chamæ*.

pictorum. *Linn. Syſt. Nat. ed. Gmel.* 3218. *Penn. Br. Zool. No.* 17. *t.* 43. *f.* 17. *Da Coſt. Br. Conch. p.* 228. *t.* 15. *f.* 4. 4. —*Elem. Conch. t.* 7. *f.* 12. *Liſt. Conch. t.* 147. *f.* 2, 3. —*An. Ang. t.* 2. *f.* 30. *App. t.* 1. *f.* 4. *Chemn. Conch.* 6. *t.* 1. *f.* 6. *Argenv. Conch. t.* 27. *f.* 10.—*Zoom. t.* 8. *f.* 11.

TAB. XIV. Fig. 7, 8.

In the hinge of the *M. pictorum* we meet with an arrangement of teeth different from any other of the Britiſh ſpecies of this genus.

Near the beak are ſituated two upright teeth, one in each valve. The largeſt of the two is ſerrated.—There are likewiſe three remote teeth, two in one ſhell,

ſhell, and one in the other. Both Da Coſta and Pennant have figured the inſide of this ſhell, without paying any attention to the teeth. Dr. Liſter, however, thought their arrangement too curious to be paſſed unnoticed. He has therefore engraved them in his *Hiſt. Conchyliorum*, and alſo in his *Hiſt. An. Ang.*

SOLEN.

Siliqua. *Linn. Syſt. Nat. ed. Gmel.* 1. *p.* 3223. *Penn. Br. Zool. No.* 20. *t.* 45. *f.* 20. *Da Coſt. Br. Conch. p.* 285. *t.* 17. *f.* 5.—*Elem. Conch. t.* 7. *f.* 8. *Liſt. Conch. t.* 409. *f.* 255.—*An. Ang. t.* 5. *f.* 37. *Chemn. Conch.* 6. *t.* 4. *f.* 29. *Gault. Teſt. t.* 95. *f. C. D. E. Knorr. Vergn.* 6. *t.* 1. *f.* 1.

Tab. XIV. Fig. 9.

The hinge of the *Solen Siliqua* is furniſhed with three teeth; two thick ones in one valve receiving a lamina between them from the other. An edged production from the teeth is continued down about the third of an inch on each ſide of the hinge, where it terminates inwards in a rounded ſhape.

Da Coſta, in his *Br. Conch.* has deſcribed the *Solen Siliqua*, but figured the *S. incurvatus* of Dr. Solander. Gmelin alſo has fallen into much the ſame error, by quoting Liſter, *Hiſt. Conch. t.* 413. A note of interrogation, indeed, is very properly added, but no reference is made to t. 409, f. 255, which is an exact copy of the true figure of the *S. Siliqua*, in the *Hiſt. An. Ang.*

The hinge in the two ſhells is the ſame.

Vagina.

Vagina. *Linn. Syſt. Nat. ed. Gmel.* 1. *p.* 3223. *Liſt. Conch. t.* 410. *f.* 256. *Argenv. Conch. t.* 24. *f. K. L. M. Zoom. t.* 6. *f. G. H. Knorr. Vergn.* 1. *t.* 28. *f.* 3.

TAB. XIV. Fig. 10.

Hinge with a ſingle tooth in each valve. A continuation of the inner edge of the ſhell forms the upper tooth. The lower one is fixed upon a baſe, which is ſituated obliquely.

The ſurface of both is flat.

pellucidus. *Penn. Br. Zool. No.* 23. *t.* 46. *f.* 23.

TAB. XIV. Fig. 11.

The hinge of this very delicate ſhell is furniſhed with five ſmall, pointed teeth, three of which are ſituated in one valve, and two in the other. It muſt be remarked, that the central one of the three is bifurcated.

This ſhell has hitherto, I believe, eſcaped the notice of every author, except Pennant; who informs us that it inhabits the Red Wharf, Angleſea. We find it, though very rarely, in the muddy part of the Sandwich ſhore, towards the mouth of the haven. A few ſpecimens have lately been dredged up at Folkſtone.

TELLINA.

planata. *Linn. Syſt. Nat. ed. Gmel.* 1. *p.* 3232. *Penn. Br. Zool. No.* 29. *t.* 48. *f.* 29. *Liſt. Conch. t.* 405. *f.* 251. *Gault. Teſt. t.* 77. *f. M.*

TAB.

TAB. XV. Fig. 1—4.

One valve of the *T. planata* contains three teeth; two near the beak, and one rather remote.

The other valve has only two, and the largeſt is divided longitudinally.

incarnata. *Linn. Syſt. Nat. ed. Gmel.* 1. *p.* 3234. *Penn. Br. Zool. No.* 32. *t.* 49. *f.* 32. 32. *Liſt. Conch. t.* 405. *f.* 250. —*An. Ang. t.* 4. *f.* 25. *Da Coſt. Br. Conch. p.* 211. *t.* 12. *f.* 4. 4. 4. *Gault. Teſt. t.* 88. *f. M.*

TAB. XV. Fig. 5—8.

This ſhell has two teeth cloſe to the beak in each valve, one of which is ſulcated. There are no remote teeth.

Mr. Pennant has called this ſhell *carnaria*. I believe his *T. incarnata* to be the *T. radiata* of Linnæus.

cornea. *Linn. Syſt. Nat. ed. Gmel.* 1. *p.* 3242. *Penn. Br. Zool. No.* 36. *t.* 49. *f.* 36. *Da Coſt. Br. Conch. p.* 173. *t.* 13. *fig.* 2. 2. *Liſt. Conch. t.* 159. *f.* 14.—*An. Ang. t.* 2. *f.* 31. *App.* 22. *t.* 1. *f.* 5. *Gault. Teſt. t.* 7. *f. B. C. Chemn. Conch.* 6. *t.* 13. *f.* 133. *a. b.*

TAB. XV. Fig. 9—12.

In the *T. cornea* we find four teeth in each valve. The two remotely ſituated are of a conſiderable ſize; but thoſe placed more immediately under the beak are ſo minute, that they are hardly to be diſtinguiſhed without a magnifying glaſs, even in the large Thames ſpecimens.

If the principal generic character of a ſhell reſt upon the formation of the hinge, it will, perhaps, be difficult to find a proper place for the *T. cornea*. The central teeth do not perfectly agree with the character of a *Tellina*; and the remote teeth differ ſo evidently, that Da Coſta has removed this ſhell into the next genus, where we find it under the name of *Cardium Nux*.

rivalis. *Maton in the Linn. Tranſ. v.* 3. *p.* 44. *t.* 13. *f.* 37, 38.

TAB. XV. Fig. 13—16.

The hinge of this ſhell is formed of four teeth in each valve, two at the beak and two remote. The two near the beak in one valve unite to form a ſmall arch. One of the teeth in the other valve is double.

T. rivalis is ably deſcribed, and well figured, in the Tranſactions of this Society, where the difference between it and the *T. cornea* is ſufficiently pointed out.

bimaculata. *Linn. Syſt. Nat. ed. Gmel.* 1. *p.* 3240. *Da Coſt. Br. Conch. p.* 213. *Chemn. Conch.* 6. *t.* 13. *f.* 127.

TAB. XV. Fig. 17, 18, 19.

The figure of this ſhell was ſent to me, unaccompanied by a deſcription. There appears to be a thick tooth in the centre of the hinge of one valve; and a cavity, probably for its reception, between two teeth, in the oppoſite.

ſervenſis.

ſervenſis. *Linn. Syſt. Nat. ed. Gmel.* 1. *p.* 3235. *Liſt. Conch. t.* 394. *f.* 241.

TAB. XV. Fig. 20, 21.

This hinge, in one valve, has a ſingle upright tooth, ſituated by the ſide of a ſlight depreſſion, which is divided in the middle by a ſmall ridge. The lower valve has likewiſe an erect tooth, which is notched. The ſhape of this ſhell approaches ſo nearly to the *T. radiata*, that I imagine the hinge in both will be found the ſame. At preſent I have not an opportunity of comparing them.

CARDIUM.

aculeatum. *Linn. Syſt. Nat. ed. Gmel.* 1. *p.* 3247. *Penn. Br. Zool. No.* 37. *t.* 50. *f.* 37. *Da Coſt. Elem. of Conch. t.* 1. *f.* 8. *Liſt. Conch. t.* 321. *f.* 128. *Gault. Teſt. t.* 72. *f. A. Chemn. Conch.* 6. *t.* 15. *f.* 155—157.

TAB. XVI. Fig. 1, 2.

The character of the hinge in this ſhell is ſo ſtrongly marked, and ſo exactly reſembles the other ſpecies, that one figure will ſuffice for the whole genus.

No other deſcription is neceſſary than what may be found in the explanation of the plates.

MACTRA.

lutraria. *Linn. Syſt. Nat. ed. Gmel.* 1. *p.* 3259. *Penn. Br. Zool. No.* 44. *t.* 52. *f.* 44. *Liſt. Conch. t.* 415. *f.* 259.—*An. Ang. t.* 4. *f.* 19. *Rumph. Muſ. t.* 45. *f. M. Chemn. Conch.* 6. *t.* 24. *f.* 240, 241.

TAB. XVI. Fig. 3, 4.

The valves of this ſhell are firmly connected together, by a quantity of cartilage ſeated in two ſpoon-ſhaped cavities. On the ſide of one of the cavities, in the upper valve, there is a very ſtrong tooth, the two plates of which form an obtuſe angle, and the whole is received between two teeth in the oppoſite valve.

Da Coſta, when he wrote his *Britiſh Conchology*, was not aware that this ſhell formed a diſtinct ſpecies from the following; he has therefore deſcribed and figured the *M. hians* α under the name of *Chama magna*, while his Synonyms direct the reader to the *M. lutraria*.

hians. *Da Coſt. Br. Conch. p.* 231. *t.* 17. *f.* 4.

TAB. XVI. Fig. 5, 6.

The great cavity in the hinge of this ſpecies is larger, more ſpread, but not ſo regularly ſhaped as in the preceding. The great tooth in the upper valve locks, like that in the *M. lutraria*, between two teeth in the lower valve, of which the outer one, in the ſpecimen before me, is grooved longitudinally, and, when the ſhell is cloſed, fits into a ſmall cavity on the outſide of the tooth in the upper valve. It ſhould likewiſe be noted, that there is in both valves a deep, narrow ſulcus, which runs from the beak of the ſhell acroſs the baſe of the great cavity, and cloſe on the inſide of the teeth.

ſtultorum.

ſtultorum. *Linn. Syſt. Nat. ed. Gmel.* 1. *p.* 3258. *Penn. Br. Zool. No.* 30. *t.* 49. *f.* 30. *Da Coſt. Br. Conch. p.* 196. *t.* 12. *f.* 3. 3. *Liſt. Conch. t.* 251. *f.* 85. *Gault. Teſt. t.* 71. *f. C. Chemn. Conch.* 6. *t.* 23. *f.* 224—227.

TAB. XVI. Fig. 7, 8.

There is an erect tooth in the upper valve of this ſhell, near the beak, ſomewhat ſimilar in ſhape to the great one in the *M. lutraria.* This fits within a rectangular tooth in the lower valve, which likewiſe contains four remote teeth, like laminæ, receiving between them two from the upper valve.

I have referred for this ſhell to Mr. Pennant's *Tellina radiata*, as both his deſcription and figure agree exactly with the Linnean *M. ſtultorum.* His ſhell of that name (*No.* 42. *t.* 52. *f.* 42.) is, perhaps, only a young one of the *M. ſolida.*

alba. TAB. XVI. Fig. 9—12.

I believe we are indebted for the diſcovery of this ſhell to that accurate conchologiſt, William Boys, Eſq. who found it on the Sandwich ſhore, where I have ſince met with it in abundance.

The hinge has the true ſpoon-ſhaped cavity peculiar to the genus *Mactra*, with a ſmall tooth ſituated cloſe to it in the upper valve, which has no remote teeth. The lower valve is provided with two.

DONAX.

trunculus. *Lynn. Syſt. Nat. ed. Gmel.* 1. *p.* 3263. *Penn. Br. Zool. No.* 45. *t.* 55. *f.* 45. *Da Coſt. Br. Conch. p.* 207. *t.* 14.

t. 14. *fig.* 3. *Liſt. Conch. t.* 376. *f.* 217.—*An. Ang. t.* 5. *f.* 35. *Borlaſe Cornw. p.* 278. *t.* 28. *f.* 25. *Chemn. Conch.* 6. *t.* 26. *f.* 253, 254.

TAB. XVI. Fig. 13—16.

Hinge with a thick furrowed tooth in one valve, received between two others in the oppoſite. A ſingle marginal tooth in each valve, at a little diſtance from the beak.

VENUS.

iſlandica. *Linn. Syſt. Nat. ed. Gmel.* 1. *p.* 3271. *Penn. Br. Zool. No.* 47. *t.* 53. *f.* 47. *Da Coſt. Br. Conch. p.* 183. *t.* 14. *f.* 5. *Liſt. Conch. t.* 272. *f.* 108.—*An. Ang. t.* 4. *f.* 22. *Gault. Teſt. t.* 85. *f. B. Chemn. Conch.* 6. *t.* 32. *f.* 341.

TAB. XVII. Fig. 1, 2.

There is a thick upright tooth under the beak in one valve of this ſhell, which locks between two others in the oppoſite valve.

For the other teeth with which this ſhell is provided, ſee the Explanation of the Plates.

Chione. *Linn. Syſt. Nat. ed. Gmel.* 1. *p.* 3272. *Da Coſt. Br. Conch. p.* 184. *t.* 14. *f.* 7. *Gault. t.* 86. *f. A.*

TAB. XVII. Fig. 3, 4.

A ſtrong thick tooth is ſeated in each valve, directly under the cordiform depreſſion of the ſhell; another cloſe to the beak, and a third diverging from it, which laſt is thin, and in one valve grooved.

verrucoſa. *Linn. Syſt. Nat. ed. Gmel.* 1. *p.* 3269. *Penn. Br. Zool. n.* 48. *t.* 54. *f.* 48. *Da Coſt. Conch. p.* 185. *t.* 12. *f.* 1. 1. *Liſt. Conch. t.* 284. *f.* 122. *Gault. Teſt. t.* 75. *f. H. Borlaſe Cornw. p.* 278. *t.* 28. *f.* 32.

TAB. XVII. Fig. 5, 6.

This hinge is ſet with two ſtrong erect teeth, near the beak, in each valve, beſides another which runs in the direction of the cartilage.

Gallina. *Linn. Syſt. Nat. ed. Gmel.* 1. *p.* 3270. *Da Coſt. Br. Conch. p.* 191. *t.* 12. *f.* 2. 2. *Liſt. Conch. t.* 282. *f.* 120. *t.* 295. *f.* 131. *Knorr. vergn.* 5. *t.* 14. *f.* 2—5. *Chemn. Conch.* 6. *t.* 30, *f.* 308, 310.

TAB. XVII. Fig. 7, 8.

One valve is furniſhed with three teeth, the middle one thick and triangular, broad at the baſe, and the upper angle ſeated directly under the beak of the ſhell. Of the two other teeth, one is plate-like, and runs in the direction of the cordiform depreſſion, whilſt the other, much thicker, paſſes from the beak towards the cartilage. The other valve differs in having a middle tooth leſs triangular, and ſituated obliquely. In the room of the plate-like tooth there is one much more ſubſtantial.

exoleta. *Linn. Syſt. Nat. ed. Gmel.* 1. *p.* 3284. *Penn. Br. Zool. No.* 49. *t.* 54. *f.* 49. *A. t.* 56. *f.* 49. *Da Coſt. Br. Conch. p.* 187. *t.* 12. *f.* 5. 5. *Liſt. Conch. t.* 292. *f.* 128. *Gault. Teſt. t.* 75. *f. F. Chemn. Conch. t.* 38. *f.* 402. 404.

TAB.

TAB. XVII. Fig. 9, 10.

The *Venus exoleta* is provided with three large teeth in each valve, one of which is double. This ſhell has the rudiment of a ſmall tooth ſeated at the baſe of one of the largeſt, on the ſide next the cordiform depreſſion, and in the valve oppoſite to that which contains the lateral double tooth.

decuſſata. *Linn. Syſt. Nat. ed. Gmel.* 1. *p.* 3294. *Da Coſt. Br. Conch. p.* 202. *t.* 14. *f.* 4. 4. *Liſt. Conch. t.* 423. *f.* 271. *Gault. Teſt. t.* 85. *f. L.*

TAB. XVII. Fig. 11, 12.

This ſhell has two grooved teeth in one valve, beſides a plain one. Theſe teeth receive another between them, from the oppoſite valve, which is likewiſe grooved, and has for its companions a ſmall plain tooth on one ſide, and the appearance of a tooth on the other. Young ſhells have three teeth in each valve. The intermediate one is conſtantly cleft, the others plain; at leaſt, in all the ſpecimens which I have met with.

craſſa. *Linn. Syſt. Nat. ed. Gmel.* 1. *p.* 3288. *Penn. Br. Zool. No.* 28. *t.* 48. *f.* 28. *Da Coſt. Br. Conch. p.* 194. *t.* 13. *f.* 4. *right hand. Liſt. Conch. t.* 299. *f.* 136.

TAB. XVII. Fig. 15, 16.

Although we have high authority for placing this ſhell among the *Veneres*, yet we find it in the Britiſh Zoology ranked among the *Tellinæ*; and, indeed,

if we are to judge by compariſon, it more properly belongs to that genus.

The hinge of the *V. craſſa* is very plain and ſimple, conſiſting of a grooved central tooth and two others, which are remote. One valve, however, has hardly the appearance of remote teeth, though the central tooth in both is equally ſtrong.

undata. *Penn. Br. Zool. No.* 51. *t.* 55. *f.* 51.

TAB. XVII. Fig. 17, 18.

The hinge of the *V. undata* has a ſmall central tooth ſituated under the beak of the ſhell, which fits into a triangular cavity in the oppoſite valve. A deep ſulcus runs from the beak in the direction of the cartilage ſlope.

ARCA.

Glycymeris. *Linn. Syſt. Nat. ed. Gmel.* 1. *p.* 3313. *Penn. Br. Zool. No.* 58. *t.* 58. *f.* 58. *Da Coſt. Br. Conch. p.* 168. *t.* 11. *f.* 2. 2. *Liſt. Conch. t.* 278. *f.* 82. *Chemn. Conch.* 7. *t.* 57. *f.* 564.

TAB. XVIII. Fig. 1, 2.

" The hinge of the *Arca Glycymeris* is ſemicircular, and on each ſide ſet with a curved row of ſtrong tranſverſe teeth, generally from five to ten on each ſide."

This is Da Coſta's deſcription, and is ſo far juſt; but he tells us that the centre of the hinge is quite

ſmooth, and without teeth. This his figure contradicts, as well as two ſpecimens in my cabinet, the teeth of which meet in the centre, though their ſize is very much reduced. The drawing which I have given is from one of them.

Nucleus. *Linn. Syſt. Nat. ed. Gmel.* 1. *p.* 3314. *Da Coſt. Br. Conch. p.* 170. *t.* 15. *f.* 6. *right hand. Gault. Teſt. t.* 88. *f. R. Chemn. Conch.* 7. *t.* 58. *f.* 574. *a. b.*

TAB. XVIII. Fig. 3—6.

The beautiful arrangement of teeth in the hinge of this ſhell is not to be equalled by any other ſpecies on our ſhores. The regularity of their order and the elegance of their form make an accurate figure particularly deſirable. This I have attempted to give, to the beſt of my abilities, in a magnified repreſentation.

The hinge is to be ſeen in all its beauty only in live ſhells.

Of the remaining genera little need be ſaid, as the hinges are, for the moſt part, without teeth. I have, therefore, only figured one ſpecies of each genus, which, I preſume, will be thought ſufficient.

PECTEN.

pictus. *Linn. Syſt. Nat. ed. Gmel.* 1. *p.* 3325. *(oſtrea opercularis.) Da Coſt. Br. Conch. p.* 144. *t.* 9. *f.* 1, 2. 4, 5.

TAB.

TAB. XVIII. Fig. 7, 8.

" Hinge toothleſs, being only a trigonal cavity in the very centre of the commiſſure or ſummit of the ſhell, which runs in a ſtraight horizontal line." *Da Coſt. Br. Conch. p.* 140.

OSTREA.

edulis. *Linn. Syſt. Nat. ed. Gmel.* 1. *p.* 3334. *Liſt. Conch. t.* 194. *f.* 31.

TAB. XVIII. Fig. 9, 10.

The ſhells of this genus are connected together by a ſtrong central cartilage. There is a variety with a rugoſe appearance on each ſide of the hinge, which is very well repreſented in Dr. Liſter's figure.

ANOMIA.

Ephippium. *Linn. Syſt. Nat. ed. Gmel.* 1. *p.* 3240. *Penn. Br. Zool. No.* 70. *t.* 62. *f.* 70. *Da Coſt. Br. Conch. p.* 165. *t.* 11. *f.* 3. *Liſt. Conch. t.* 204. *f.* 38.

TAB. XVIII. Fig. 11, 12.

A ſimple cartilaginous hinge with an oval cavity in the concave valve. Da Coſta mentions a claw in the other valve, which is not in my ſpecimen.

MYTILUS.

edulis. *Linn. Syſt. Nat. ed. Gmel.* 1. *p.* 3353. *Penn. Br. Zool. No.* 73. *t.* 63. *f.* 73. *Da Coſt. Br. Conch. p.* 216. *t.* 15. *f.* 5. *left hand.*

TAB. XVIII. Fig. 13, 14.

I believe it has not hitherto been publicly noticed, that the common muſcle poſſeſſes teeth; ſuch, however, is the caſe, and their ſituation, cloſe to the beak of the ſhell, was firſt pointed out to me by Mr. Boys.

Theſe teeth are by no means regular, either in their arrangement or ſhape; nor is every ſhell provided with them. The ſpecimens in which I have found them are of a much larger ſize than the common, and generally make their appearance in the London markets in the depth of winter; but I am told they are not ſo much eſteemed as the ſmaller ones.

The teeth are from three to ſeven in number, and, when examined collectively, reſemble in figure and irregularity the knobs of a lobſter's claw.

PINNA.

muricata. *Linn. Syſt. Nat. ed. Gmel.* 1. *p.* 3364.

The two valves of the *Pinna* are merely united by a thin membrane, which forms a hinge of the moſt ſimple conſtruction, without even the veſtige of a tooth.

EXPLANATION OF THE PLATES.

TAB. XIV.

Fig. 1, 2. The hinge of the *Mya truncata.* (a) The great tooth. (b) The

(b) The correſponding depreſſion. (c) A ſmall tooth on one ſide of it.

Fig. 3, 4. The hinge of the *Mya arenaria.* (a) The great tooth. (b) A ridge grooved longitudinally. (c) A ſmall curve in the margin. (d) The cavity for the reception of the tooth.

5, 6. The hinge of the *Mya margaritifera.* (a) The rugged tooth. (b) Its cavity. (c) A ſharp ridge on one ſide of it, which paſſes into the cavity (d).

7. The hinge of the *Mya pictorum.* (a. a) The indented teeth. (b. b) The remote teeth.

8. A ſide view of one valve of the ſame.

9. The hinge of the *Solen Siliqua.*

10. The hinge of the *S. Vagina.*

11. *S. pellucidus.* (a) The bifurcated tooth. (b.b) The two other teeth in the ſame valve. (c) The two oppoſite teeth.

Tab. XV.

1, 2. The hinge of the *Tellina planata.*

3, 4. The ſame magnified*. (a. a) The large tooth in each valve. (b.b) Two ſmall teeth. (c) The lateral tooth.

5, 6. The hinge of the *Tellina incarnata.*

7, 8. The ſame magnified. (a. a) The two large teeth. (b.b) The two ſmaller ones. When the ſhell is placed horizontally theſe teeth appear very prominent, and the ſulcus in the large tooth is very apparent.

9, 10. The hinge of the *Tellina cornea.*

* The ſhells were, for the moſt part, magnified by Ellis's ſingle Aquatic Microſcope.

Fig.

Fig. 11, 12. The ſame magnified. (a.b) Two teeth which receive between them the triangular tooth (c). (d) A ſmall tooth which paſſes on the outſide of (a). (e. e. e. e) Lateral teeth.

13, 14, The hinge of the *Tellina rivalis.*

15, 16. The ſame magnified. (a.b) Two teeth which unite, and are continued to form an arch for the reception of the triangular tooth (c), on one ſide of which is a ſmall tooth (d). (e. e. e. e) Lateral teeth.

17,18,19. Hinge of the *Tellina bimaculata.*

20, 21. *Tellina ſervenſis.* (a.b) Two erect teeth. In my ſpecimen, one is plain, the other notched. (c) A ſmall ridge dividing a depreſſion by the ſide of (a).

TAB. XVI.

1, 2. *Cardium aculeatum.* (a. a. b. b) Four erect teeth which lock together when the ſhell is cloſed. (c) A remote tooth which fits between (d. e), while (f) receives its oppoſite, (g).

3, 4. *Mactra lutraria.* (a) The great tooth. (b) The ſpoon-ſhaped cavity. (c) The place which receives the great tooth.

5, 6. *Mactra hians.* (a) The erect tooth. (b.b) The great cavity. (c. d) Two teeth which receive (a) between them. (e) A ſmall cavity for the grooved tooth (d). (f.f) A narrow ſulcus.

7, 8. *Mactra ſtultorum.* (a) The triangular tooth. (b) The rectangular one in the oppoſite valve. (c. c) The cavity for the cartilage. (d. d. d. d) Remote teeth.

9, 10. *Mactra alba* of the natural ſize.

11, 12. The hinge of the ſame magnified. (a. a) The ſpoon-ſhaped cavity. (b) A ſmall tooth. (c.c) Remote teeth.

Fig.

Fig. 13, 14. The hinge of the *Donax Trunculus*.

15, 16. The ſame magnified. (a) A thick ſulcated tooth received, when the ſhell cloſes, between (b. b). (c. c) Marginal teeth.

Tab. XVII.

1, 2. *Venus iſlandica.* (a) The great tooth which locks between (b. b), while the rugged tooth (c) fits into a hollow within the ſmall tooth (d). (e. e. e) Remote teeth.

3, 4. *Venus Chione.* Beſides the two ſtrong teeth in this ſhell, (a) and (b), there is a third, (c), which paſſes into the cavity (d). (e) A tooth grooved longitudinally.

5, 6. *Venus verrucoſa.* (a. b) Two thick teeth receiving (c) between them. (d) A large tooth which paſſes on the inſide of (e). (f) A thin tooth in the direction of the cartilage.

7, 8. *Venus Gallina.* (a.b) The two principal teeth. (c.d) Two ſmaller ones, of which (d) is plate-like. (e) A marginal tooth.

9, 10. *Venus exoleta.* (a) An erect tooth which locks between (b. b). (c) A thick channelled tooth received between (d. d).

11, 12. *Venus decuſſata.* (a) The two cleft teeth in one valve. (b) The ſame in the oppoſite. (c) The plain tooth.

13, 14. This ſhell is provided with a beautiful pectinated hinge, conſiſting of three teeth in each valve. Theſe teeth are placed in the moſt regular order, and the middle one, I believe, is conſtantly grooved. Frequently there is a channel in one of the other teeth, and ſometimes, though rarely, we meet with it in both.

When this ſpecies is found with only two teeth in one

valve and three in the other (as is ſometimes the caſe), it muſt be conſidered as incomplete.

It was not till I began attentively to examine the hinges of Britiſh bivalves, that this ſhell appeared to me eſſentially different from the *V. decuſſata*. We find it, not uncommonly, on the Sandwich ſhore, from half an inch to one and a half or two inches in breadth, and ſometimes marked on the outſide (in a zigzag manner) with all the ſtrength and elegance of a foreign ſpecimen.

This ſpecies is broader, in proportion, than the *V. decuſſata*, and the ſtriæ are more delicate.

Fig. 15, 16. *Venus craſſa.* (a) The two principal teeth. (b.b.b.b) Remote teeth.

17, 18. The hinge of the *Venus undata.* (a) The central tooth. (b) Its cavity.

TAB. XVIII.

1, 2. The hinge of the *Arca Glycymeris*, which in this particular ſpecimen is furniſhed with an extraordinary number of teeth.

3, 4. *Arca Nucleus* of the natural ſize.

5, 6. The hinge of the ſame magnified.

7, 8. The hinge of the *Pecten pictus.*

9, 10. The hinge of the *Oſtrea edulis.*

11, 12. The hinge of the *Anomia Ephippium.*

13, 14. The hinge of the *Mytilus edulis.* (a. a) The ſituation of the teeth.

XV. *Cata-*